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REMARKS

ON THE MANUFACTURING OF

MAPLE SUGAR:

WITH

DIRECTIONS

FOR ITS FURTHER IMPROVEMENT.

COLLECTED BY A SOCIETY OF GENTLEMEN, IN PHILADELPHIA, AND PUBLISHED FOR THE GENERAL INFORMATION AND BENEFIT OF THE CITIZENS OF THE UNITED STATES.

PHILADELPHIA PRINTED, 1790.

LONDON:
REPRINTED BY JAMES PHILLIPS, GEORGE YARD,
LOMBARD STREET.
M.DCC.XCI.

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REMARKS

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HE who enables another to obtain any neceſſary of life, either cheaper or more independently than heretofore, adds a new ſource of happineſs to man; it becomes more or leſs uſeful, in proportion to the number of thoſe who participate in the benefits of his diſcovery. The tranſitions, however, made from one ſtage of improvement to another, are not ſudden, but gradual; which probably ariſes from that ſtrong and almoſt univerſal diſinclination, in the mind, at departing from the beaten path, or from long eſtabliſhed cuſtoms. Hence men, frequently, at firſt, treat with neglect or contempt, that which, afterwards on better information, and a thorough knowledge of facts, they believe, and without reſerve, adopt in their ſubſequent practice. Were we to introduce, and embrace, as a maxim,—"That every new propoſition, merely on "account of its novelty, muſt be rejected,"—our knowledge would no longer be progreſſive, and every kind of improvement muſt ceaſe.

That the juice of the Sugar Maple would produce a ſaccharine ſubſtance, anſwering the purpoſes of ſugar, has been known many years, and particularly by the inhabitants of the Eaſtern States;—but that there was a ſufficient number of this kind of tree, in the States of New-York and Pennſylvania only, to ſupply the whole of the United States, with this article, is a fact which was not ſo well aſcertained or ſo ſatisfactorily authenticated, till within a year or two paſt;—and that the ſugar of this tree was capable of being *grained*, and produced, in quality, equal to the beſt imported,—was in ſome meaſure problematical till within even two or three months paſt, when the arrival of ſeveral cheſts, in the city of Philadelphia, made laſt ſpring on the Delaware, removed every doubt, in the minds of thoſe who have ſeen it, as to the truth of this laſt fact.

The object which this publication has particularly in view, is, ‘ A communication of ſuch obſervations and di‘ rections on *manufacturing the Maple Sugar*, as will be ‘ moſt uſeful to thoſe, who, from ſituation, intereſt, or ‘ patriotiſm, may be induced to engage in and carry on ‘ this buſineſs.’—A perſon who had many years been acquainted with the uſual way of making this article, being deſirous of improving the method, obtained the inſtructions of a refiner of ſugar in this city, and, with theſe before him, began his experiments in February laſt at STOCKPORT, about three miles below the junction of the Mohock and Popatchtunck branches of the Delaware. He ſoon diſcovered that the buſineſs was yet in its infancy, that great and even eſſential improvements might be made therein, which would require a departure from the methods heretofore in general uſe, in boiling down the green ſap, graining the ſyrup, &c. and which, if attended to and adopted, would enable him to produce ſugar, in colour, grain, and taſte, equal, if not ſuperior in reputation, to any imported. His ſentiments and hopes, on this head, have been fully confirmed, by the reſult of his experiments; for the ſugar he has made, and ſent down to this city, in the opinion of well qualified judges, is *equal* to the *beſt ſugars* imported from the Weſt India iſlands.

The perſon above mentioned, whoſe judgment on this ſubject is much to be relied on, as well from his experience in the buſineſs, as his eſtabliſhed character for candour and integrity,—is clearly of opinion,—that four, active, induſtrious men, well provided with materials, and conveniences proper for carrying on the buſineſs, may turn out in a common ſeaſon, which laſts from four to ſix weeks,—*forty hundred weight of good ſugar*, that is, *ten*

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hundred to each man. If four men can effect this, how great muſt be the product of the ſeparate or aſſociated labours of the many thouſands of people who now inhabit, or may inhabit the immenſe tracts of land, which abound with the Sugar Maple tree! What a new and extenſive field opens from theſe conſiderations! what an intereſting and important object, to the cauſe of humanity, preſents itſelf to our view! an object that deſerves the countenance of every good citizen, and that highly merits even NATIONAL ENCOURAGEMENT.

The buildings, implements, and utenſils needful for this manufacture, and ſuited for the uſe of four good hands, it is thought, may, together with the beſt proceſs yet known for boiling the ſap, granulating the ſyrup, &c. be uſefully pointed out, that thoſe perſons who incline to enter upon it in the next year, may proceed on the beſt information to be had, and timely provide themſelves with every thing neceſſary for the purpoſe; particularly, with ſuch articles made of wood, as require ſeaſoning. Where a larger number than four men are intended to be employed at one *Sugar Camp*, the kettles and other articles to be provided, as well as the number of trees to be tapped, may be increaſed accordingly.

Detail and Deſcription of the neceſſary Utenſils and Materials.

KETTLES: *ſixteen*, of about fifteen gallons each.

IRON LADLES: *two*, the bowls to contain three or four quarts each, for ſhifting the ſyrup: the handles to have ſockets, which may be extended with wood to any convenient length.

TRAMMELS or POT-RACKS: *ſixteen*, one for each kettle, eighteen inches long, the flat part; and the round or lower piece, the ſame; ſo as to lengthen to about three feet, occaſionally.

SCREW AUGERS: *four*, of an half, three quarters, and one inch, for boring the trees.—Although it has been found that the Sugar Maple tree will bear much hardſhip and abuſe; yet the chopping notches into it, from year to year, ſhould be forborne; an auger hole anſwers the purpoſe of drawing off the ſap, equally well, and is no injury to the tree.

BUCKETS: *eight* or *ten*, of three gallons each, at leaſt, for collecting the ſap.

BOARDS: *eight* or *ten*, round pieces, to lay on the ſurface of the ſap, at the top of the buckets, to prevent its ſplaſhing over.

COOLERS: *three* or *four* tubs, of about fifteen gallons each (kettles will anſwer the purpoſe) to receive the ſyrup from the boilers, when, upon trial from the proof ſtick, it draws into a thread between the thumb and finger, as hereafter deſcribed.

YOKES: *four*, to go acroſs the ſhoulders of the perſons employed in collecting the ſap, having a bucket ſuſpended at each end.

TROUGHS: *eight hundred* ſhould be made of white pine, white aſh, water aſh, aſpen, linden or baſs-wood, poplar, common-maple or Sugar-Maple:—avoid, for this uſe, the butter-nut, cheſnut, and oak;—theſe would either diſcolour the ſap, or give it an improper taſte.—A perſon acquainted with the buſineſs, can cut down the timber proper for the purpoſe, and hollow out about twenty of theſe troughs in a day; they generally hold from two to three gallons: the largeſt ſhould be placed to receive the ſap of thoſe trees that are moſt thriving, and which yield the greateſt quantity.—It may alſo be noted, that white-aſh and white-pine will make the troughs when green; the other kinds of timber above mentioned ſhould be ſeaſoned, or they will be liable to leak.

STORE TROUGHS: where large ciſterns fit for the purpoſe cannot be had, which will generally be the caſe in a new country, troughs may be made of the white-pine, by falling a large tree of that kind, and fixing it in a level poſition; the upper ſide to be dug out in the ſhape of a manger for feeding cattle: the larger it can be made for receiving the green ſap, the better. White-aſh and linden or baſs-wood will alſo anſwer the purpoſe; ſhould any of them ſplit and leak, they may be caulked tight.—Theſe troughs ſhould be at a convenient diſtance from the boilers, in a cool place, and under cover, to prevent ſnow, rain, &c. mixing with the ſap. A linen ſtrainer ſhould be ſo fixed that the ſap, when collected in buckets, may paſs through ſuch ſtrainer into theſe troughs, at one end, and at the other end, room ſhould be left to dip out for feeding the boilers.

SHEDS, WALLS, &c. The expoſed manner in which ſugar has been uſually made, in the back country, is attended with many inconveniences, eſpecially in windy weather, when the aſhes, leaves, &c. may be blown into the boilers, and thereby diſcolour the ſyrup, or injure its flavour; neither can the keeping up a proper degree of heat be always effected in an expoſed ſituation. To remedy theſe inconveniences it is recommended that a back wall, for the fire place, be erected, eighteen or twenty inches high, and to extend a ſufficient length for all the boilers employed. This wall may be made of ſtones laid in clay or loam, where lime-mortar is not readily to be had.—For ſaving the aſhes, and the greater convenience in making and continuing a regular fire, under the boilers, a hearth of flat ſtone, about three feet wide, ſhould be made to extend an equal length with the back wall. And further to obviate the ill effects, which too open an expoſure is ſubject to, (it being obſerved where a number of boilers are placed in a range, thoſe at, and near, the outer ends, do not ſucceed ſo well as the more central ones) it is ſtrongly recommended that ſheds be erected, to extend over and cover the whole length of the hearth, and ſo formed that the ſmoke may paſs off, and be at the ſame time a ſhelter from high winds, rain, ſnow, &c. For graining the ſyrup, after it is brought to a proper ſtate in the boilers, it will be right to have a ſeparate ſhed or building, in which two of the ſixteen kettles ſhould be fixed;—for this ſervice, charcoal is much better than wood, as the heat or flame ſhould be confined to the bottoms of the kettles, and be uniform and regular, to guard againſt burning or ſcorching. A wall, as above deſcribed, ſhould be made at the back of the fire-place, as well as at each end; and the hearth or bottom laid with flat ſtones, on which charcoal is to be placed.

AND-IRONS: Pieces of caſt-iron, ſomething like and-irons, and to ſerve the ſame purpoſe, will be very uſeful: they ſhould, in the long part, be two feet and an half, and two inches ſquare; the turn at the inner end, four inches downwards, and a ſmall turn upwards, at the outer end, of about two inches, to prevent the wood from rolling. Of theſe, there ſhould be a number to ſuit the extent of the fire-place, to be placed at the diſtance of five or ſix feet from each other.

SUGAR MOULDS: Theſe ſhould be made of ſeaſoned boards, or of ſuch wood as will not impart a taſte to the ſugar. To anſwer the end of *earthen* moulds, uſed in the Weſt Indies, and in our refining houſes, the uſe of ſugar moulds has been, in the preſent year, well ſupplied, by making them *of wood*, ſomewhat reſembling a millhopper, about twenty-ſeven inches long, and ten or twelve inches wide, at the top, and tapered to the width of one inch, at the lower end.

FRAMES, to place the moulds in, above deſcribed, ſhould be formed ſo as to admit the moulds to reſt in them, about half their depth.

GUTTERS, ſpouts, or narrow troughs,—-ſhould be fixed within the frames, under the moulds, in a deſcending poſition; the lower ends to enter covered caſks or veſſels, ſo that when the plugs or ſtoppers are drawn from the bottom of the moulds, which may be done in about twenty-four hours after they are ſet, the molaſſes that will run therefrom may fall into theſe gutters, and paſs readily into the *covered* veſſels which if open would be expoſed to duſt and dirt.

PRICKERS: So termed by the ſugar bakers, about twelve inches long and half an inch diameter, at one end, and the other, brought to a point; for want of iron, they may be made of hard wood:—a few hours after the moulds are unſtopped, the prickers ſhould be run up the bottom of them three or four inches, to make way for the whole quantity of molaſſes to paſs off.

Proceſs or mode of manufacturing the Sap of the Maple, which by further Experience and cloſe Obſervation, may probably hereafter admit of conſiderable Improvement.

SEASON for TAPPING:—By trials, made in the month of February, it will readily be diſcovered, when this valuable tree ought to be bored, for the purpoſe of extracting the ſap, as in that month, either earlier or later, according to the ſeaſon, it generally begins to yield a ſufficient quantity for commencing the buſineſs.

TAPPING or BORING:—Four hundred trees, each tree bored with two holes, as nearly as may be on the ſouth ſide; and alſo with two holes on the north ſide of the tree, in the early part of the ſeaſon, with ſcrew augers from two to four quarters of an inch, according to the ſize of the tree; and toward the middle of the ſeaſon, a like number of trees to be bored in the ſame manner, is recommended, as a better mode for the management of four hands, than if the whole number of eight hundred trees were tapped at the firſt running of the ſap. The ſap of the ſecond parcel tapped, will be found richer and more productive than if a part had been extracted earlier.—The auger ſhould enter the tree at firſt not more than three quarters of an inch: the holes may, at ſeveral times, be deepened to the extent of two inches and an half, as the manner of the ſap's running may render neceſſary. The hole ſhould be made ſlanting or deſcending, ſo that the ſap may run freely in froſty weather, and not, by a ſlow motion, be liable to freeze in the mouth of the orifice. In theſe holes, ſpouts ſhould be fixed, to project from the tree from eight to twelve inches, and not to enter the tree more than about half an inch; as the farther they enter, the more the running of the ſap is obſtructed: they ſhould be prepared, in readineſs for the ſeaſon, of elder or ſumach.

PRESERVING the SAP:—It is obſerved, that in the early part of the ſeaſon, the ſap will keep two or three days without injury; but as the ſpring advances, and the froſt becomes leſs intenſe, it will be neceſſary to boil the ſap the day after it is collected, or it may ferment and ſour.

LIME:—To every half barrel, or fifteen gallon kettle, a table ſpoonful of ſlacked lime, ſhould be put in, while the ſap is warming, and before it boils; this promotes the riſing of the ſcum and forming of the grain.

BOILING:—A ſmart fire ſhould be kept up, while the ſap is boiling, and the watery part evaporating.—As the ſcum riſes to the top, be careful to ſkim it off. When the liquor is reduced one half in quantity, lade the ſecond kettle from the end, into the end one; and when the contents of three or four kettles can be contained in one, then let the whole be laded into that, at the end; filling up the empty kettles, without delay, with freſh ſap. As the liquor in the end kettle, removed from thoſe which have been mentioned, becomes a ſyrup, it ſhould be ſtrained through a good blanket, or woollen cloth; and care muſt be taken, not to ſuffer it to boil ſo long, as to be too thick to be ſtrained, in this manner. It ſhould, when thus cleanſed from its impurities, ſtand in buckets or other ſuitable veſſels, twelve hours or more, that the particles of lime, and other remaining ſediment, may ſettle to the bottom; after which, it ſhould be ſo gently poured off into a kettle or boiler, as not to carry with it any of theſe ſettlings. However, they need not be wholly loſt; they will moſtly contain a conſiderable quantity of ſugar or ſyrup; by pouring freſh ſap on them, ſtirring them well together, and ſuffering them to ſtand a while to ſettle; a great part of the valuable ſweets contained in ſuch ſediment may be ſaved. It may be further noted, that when the ſap is weak, which is generally the caſe towards the latter part of the ſeaſon, it requires more boiling and a higher proof than that collected earlier and of greater ſtrength.

N. B. The method above deſcribed was purſued in the laſt year, and appeared to anſwer well; it is nevertheleſs believed, by a judicious ſugar-boiler, that it would be beſt to avoid letting the ſyrup ſtand twelve hours after being ſtrained through a blanket: When the proceſs

ceſs is begun, the ſooner it is completed, in his opinion, the better:—the deſign of its ſo ſtanding, for twelve hours, being chiefly intended to give ſufficient time, for the particles of lime and other ſediment to collect at the bottom of the kettle.—It is propoſed that lime ſhould be mixed with a quantity of freſh ſap, in the evening, and be well ſtirred; the large particles of lime, in this caſe, will be likely to ſubſide before morning, and the clear ſap ſo impregnated may be mixed, the next morning, in proper proportions, in the ſeveral kettles; obſerving, however, that in this mode, more lime will be neceſſary, as leſs of its ſtrength will be extracted by cold than by hot water.

GRAINING:—The ſyrup, having ſtood twelve hours, or upwards,—is then to be gently poured into a kettle or boiler, as above-mentioned; which would be beſt placed over a fire made of charcoal, as before hinted; unleſs the kettle is ſo fixed in a furnace, or in ſuch a ſituation, that the flame can be confined to the bottom; for if it be ſuffered to paſs on the ſides, it endangers the ſyrup's being burned.—This operation ſhould alſo be performed with a ſmart fire, to be uniformly and equally kept up,—in which, as well as in boiling the green ſap, the uſe of butter, hog's lard, or other fat, is not only very uſeful and advantageous, but abſolutely neceſſary.—When, in the courſe of boiling, the ſap riſes towards the top, a piece of fat equal in ſize to a ſmall nutmeg, thrown in, will keep it down. Particular care ſhould be taken to prevent, by theſe means, the riſing of the ſyrup when graining, which may require a larger proportion of butter, &c. It is found that the evaporation is much more expeditious, and it is believed that the quantity of ſugar made, is larger, when a careful guard is kept up to prevent the ſap, and particularly the ſyrup, when graining, from riſing; by the timely introduction of a piece of fat, as above deſcribed.—To form a judgment, *when* the ſyrup is ſufficiently boiled, take out with quickneſs the ſtirring-ſtick, which is conſtantly kept in the boiler, for the purpoſe of taking the proof, rub ſome of the ſyrup off the lower end of it, with the thumb, and if on applying the finger thereto, it draws into a thread, it may be deemed in a proper ſtate to be laded into a tub or cooler. Then it ſhould be forthwith ſtirred, and that inceſſantly, with a *ſtirring-ſtick*, about three inches broad, until the grain can be felt between the finger and thumb, when it is in a fit ſtate to be poured into the moulds. The managing a ſugar works in the Weſt-Indies, and in the refining houſes in North-America, has been found to require much judgment and experience, to conduct the buſineſs to the beſt advantage; indeed, it ſeems hardly poſſible, to communicate to perſons who have little knowledge of the matter, and in terms clearly to be underſtood, full information, as to the different appearances of the ſyrup, in the time of boiling, and to point out the *moment* when ſuch material movements or changes ought to be made; nevertheleſs, from the foregoing hints and directions, which are grounded on obſervation and experience, it is hoped, much uſe may be derived, and that from year to year, greater advances and improvements may be made, in this valuable buſineſs.

CLAYING, or WHITENING the SUGAR:—To promote the molaſſes paſſing more freely from the ſugar, when draining in the moulds, and to improve its colour, in two or three days after the moulds are unſtopped at the lower end, mix white clay with water, ſo as to reduce it to a thin mortar; with this cover the top of the moulds one inch and a half thick, when this covering appears dry, remove it, and ſupply the place with a freſh covering of about two inches thick.

Although it is apprehended the uſe of clay, as above ſet forth, particularly in the latter part of the ſeaſon, will be found beneficial, it may, however, be prudent to continue or decline the practice, according to the effect or uſe it appears to be of, on a careful trial: — the quantity of clay muſt be proportioned to the manner in which the ſugar has been boiled: — if high boiled, it will require much more clay than if boiled low. It is alſo thought that the uſe of clay leſſens the quantity of ſugar, perhaps one fifth part, and may be more or leſs, according to the knowledge of the perſon who undertakes the buſineſs. And it may be further remarked, that if the quantity of ſugar be leſſened in weight, by claying, *one fifth part*, it is not to be concluded that the whole of this fifth part will be eventually loſt ; there will be more ſyrup than there otherwiſe would have been, independent of the water from the clay that paſſes through the ſugar.

MOLASSES and VINEGAR: — When the trees of the ſecond tapping become poor, in quantity and quality, which may be about the tenth of April, or perhaps ſooner, then a number of freſh tapped trees will yield a ſap, of which may be made, good molaſſes, and alſo excellent vinegar.

In all ſugar plantations, it will be advantageous to cut out the different ſorts of timber which grow intermixed with the Sugar-Maple, and even thoſe of that ſpecies which are not thriving, promiſing trees. The timber ſo cut out will ſerve for fuel for the boilers, and leave greater openings for the rays of the ſun to enter, which will have a tendency to improve and enrich the remaining trees. The ground ſo cleared of all except the maple tree, it has been obſerved, is particularly favourable for paſture and growth of graſs. "Whether this tree is injured or em-"poveriſhed by repeated tappings," is an inquiry to be expected, and has been frequently made, of late, by perſons who have anxiouſly wiſhed for the ſucceſs of this buſineſs. It has been before obſerved, that it will bear much hardſhip and abuſe, and it may be added, that there are inſtances, particularly among the old ſettlements on the North River, of trees which have been tapped for fifty years or upwards, and continue to yield their ſap in the ſeaſon, equal to any brought into uſe of later time ; indeed it is aſſerted, with confidence, by perſons who have had ſome years experience, that theſe trees, by uſe, become more valuable, yielding a ſap of a richer quality. How far a careful cultivation of them, the ſtirring and manuring the ſoil in which they ſtand, may improve their value, remains to be aſcertained in future, though it may be expected, that this, like almoſt all other trees and plants, may from a natural ſtate be greatly and eſſentially improved by the hand of art. Experiments, therefore, will not be unworthy the attention of thoſe citizens, ſituated in the more interior parts of the States, if it ſhall, thereby, be found that theſe trees can be readily propagated, either from the ſeed or young plants, and be brought to thrive, ſo as to be equal in their product, if not ſuperior, to thoſe which have been ſtrewed over the country, without the aid of man. To what an extent of cultivation may not this lead! There will be no riſk or diſadvantage attending the experiment; and it certainly deſerves encouragement.

July 4. 1790.

An Abridgement of the Account delivered to the Privy Council by HENRY BOTHAM, Eſq. *reſpecting the mode of cultivating a Sugar Plantation in the Eaſt Indies.*

Mr. BOTHAM was two years in the Engliſh and French W. India iſlands, and has ſince conducted ſugar eſtates in the E. Indies. He teſtifies that ſugar, better and cheaper than that in our iſlands, and alſo arrack, are produced in the E. Indies, by the labour of FREE PEOPLE. China, Bengal, and the coaſt of Malabar, produce quantities of ſugar and ſpirits; but, as the moſt conſiderable ſugar eſtates are near Batavia, I ſhall explain (ſays he) the improved mode of conducting thoſe eſtates. The proprietor is generally a rich Dutchman, who has built on it ſubſtantial works. He rents the eſtate (ſay of 300 or more acres) to a Chineſe, who lives on and ſuperintends it, and who re-lets it to free men, in parcels of 50 or 60 acres, on condition that they plant it in canes for ſo much for every pecul, 133½ lb. of ſugar produced. The ſuperintendant collects people from the adjacent villages to take off his crop. One ſet of taſk-men, with their carts and buffaloes, cut the canes, carry them to the mill and grind them. A ſecond ſet boil them. A third clay and baſket them for market, at ſo much per pecul.

Thus the renter knows with certainty what every pecul will coſt him. He has no unneceſſary expenſe, for when crop is over, the taſk-men go home, and, for 7 months in the year, there only remain on the eſtate the cane planters, preparing the next crop. By dividing the labour, it is cheaper and better done. Only clayed ſugars are made at Batavia, which are equal to the beſt from the W. Indies, and ſold at 18s. per pecul. The Shabander exacts a dollar per pecul on all ſugar exported. The price of common labour is from 9d to 10d per day. But the taſk-men gain conſiderably more, not only from extra work, but from being conſidered artiſts in their ſeveral branches. They do not make ſpirits on the ſugar eſtates; the molaſſes and ſkimmings are ſent for ſale to Batavia, where one diſtillery may buy the produce of 100 eſtates. Here is a vaſt ſaving in making ſpirits, not as in the W. Indies, a diſtillery for each eſtate: arrack is ſold at Batavia at about 8d per gallon; the proof of the ſpirit is about five-tenths.

After ſpending two years in the W. Indies, I returned to the Eaſt in 1776, and in the laſt war conducted ſugar works at Bencoolen, in Sumatra, on nearly the ſame principles as the Dutch; I confined my expenſes to what they had done, allowing for the unavoidable charges, on a new and ſole undertaking.

The cane is cultivated to the utmoſt perfection at Batavia; the hoe, almoſt the ſole implement of the Weſt, is there ſcarcely uſed; the lands are well ploughed by a light plough with a ſingle buffalo; a drill is then ploughed, and a perſon with two baſkets filled with cane plants, ſuſpended to a ſtick acroſs his ſhoulders, drops into the furrow plants alternately from each baſket, covering them at the ſame time with earth with his feet. Young canes are kept often ploughed as a weeding, and the hoe is uſed to weed round the plant when very young; but of this there is little need if the land has been ſufficiently ploughed. When the cane is ready to earth up, the ſpace between the rows, is ploughed deep, the cane tops tied up, and with an inſtrument like a ſhovel, with teeth at the bottom, a ſpade handle, and two cords fixed to the body of the ſhovel, ending by a wooden handle for a purchaſe, is uſed by two perſons to earth up the cane, the ſtrongeſt holding the handle of the ſhovel, preſſing it into the ploughed earth, while the other on the oppoſite ſide of the plant, by a jirk of the cord, draws up to the plant, all the earth that the plough had looſened. Two perſons with this inſtrument, will earth up more canes in the day than 10 negroes with hoes. The canes in India are much higher earthed than in the W. Indies; in moiſt ſoils, they, with little labour, earth them as high as the knee, at once making a dry bed for the cane, and a drain for the water.

The improvement in making the cane into ſugar, at Batavia, keeps pace with that in its culture: evaporation being in proportion to the ſurface, their boilers have as much of it as poſſible. The cane juice is tempered and boiled to a ſyrup; it is thrown into vats, which hold one boiling, there ſprinkled with water, to ſubſide its foul parts: after ſtanding ſix hours, is let off by 3 pegs of different heights, into a copper with one fire;

it is there tempered again, and reduced to ſugar by a gentle fire, it granulates, and the boiler dipping a wand into the copper, ſtrikes it on the ſide, then drops the ſugar remaining on it into a cup of water, ſcrapes it up with his thumb-nail, and can judge to a nicety of the ſugar's being properly boiled. The vats I mentioned are placed all at the left end of a ſet of coppers. After running off for boiling all that is clear, the reſt is ſtrained on the outſide of the boiling-houſe; what is fine is put into the copper for ſugar, the lees kept for diſtilling.

Claying of ſugar is as in the W. Indies. The cane traſh is not, as in our iſlands, carried into ſheds, where it loſes much of its ſtrength before it is uſed; but is laid out immediately to dry, then made into faggots, ſet up in cocks, and uſed immediately when dry; hence its force of fire is much greater, and the carrying it to and from the traſh-houſe is ſaved.

The culture of the cane in the W. Indies is in its infancy. Many alterations are to be made, expenſes, and human labour leſſened; the hoe, now uſed to turn up ſoils of different texture, is of one conſtruction, cheap, and very light; ſo that the negro, without any help from its weight, digs up the earth, (and, the cane roots, on replanting) by the ſevereſt exertion. In the Eaſt we plough up the cane roots.

Having experienced the difference of labourers *for profit*, and labourers *from force*, I can aſſert, that the ſavings by the former are very conſiderable.

The Weſt India planter, for his own intereſt, ſhould give more labour to beaſt, and leſs to man; a larger portion of his eſtate ought to be in paſture. When practicable, canes ſhould be carried to the mill, and cane tops and graſs to the ſtock, in waggons; the cuſtom of making a hard worked negro get a bundle of graſs twice a day aboliſhed; and in ſhort a total change take place of the miſerable management in our Weſt India iſlands. By this means following, as near as poſſible, the Eaſt India mode, conſolidating the diſtilleries, I do ſuppoſe our ſugar iſlands might be better worked than they now are, by two-thirds, or indeed one-half of the preſent force. Let it be conſidered, how much labour is loſt by the perſons overſeeing the *forced* labourer, which is ſaved when he works for his own profit. I have ſtated, with the ſtricteſt veracity, a plain matter of fact—that ſugar eſtates can be worked cheaper by *free* perſons than *ſlaves*.

FINIS.

BRITISH MUSEUM 29 APR 70

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